

ASX Announcement ([ASX: AXE](#))

10 August 2021

South Korean patent granted for 12CQ quantum computing chip

Highlights

- Commercial milestone reached with the grant of a patent protecting the 12CQ chip in an economy with a world-leading semiconductor industry.
- South Korean patent for the 12CQ chip is a significant validation of the technology's industrial and technical global competitive advantage.
- With over 1 million patents in force, South Korea is one of the most competitive patent jurisdictions in the world alongside the US and China.
- South Korea is investing US\$450 billion in its semiconductor chip industry by 2030, with the bulk of that investment coming from Samsung and SK Hynix, and also includes tax breaks, finance, and infrastructure[†].
- 12CQ patents are now granted in Japan and South Korea, with patent applications in China, the US, and Europe progressing.
- Archer is the only ASX listed company and one of a few players in the world developing a qubit processor chip in the semiconductor industry[‡].

Archer Materials Limited ("Archer", the "Company", "[ASX: AXE](#)") is pleased to announce the granting of a Republic of Korea patent ("KR Patent") associated with Archer's 12CQ quantum computing chip technology ("12CQ chip").

The KR Patent (No. 10-2288974) is a significant commercial milestone in the development of the 12CQ chip and in the Company's efforts to access global markets. South Korea is a major global manufacturer and exporter of semiconductor chip devices, with its conglomerates, Samsung Electronics and SK Hynix, among the top producers of semiconductors in the world[§].

The KR Patent application successfully underwent substantive examination procedures by the Korean Intellectual Property Office^{**}, which has over 1 million patents in force^{††}. South Korea has the highest number of patents per unit of GDP and the country files patents most heavily in electronic equipment (top ranked globally) and computing technology. Together with the US and China, South Korea is one of the most competitive jurisdictions for patent granting.

Patent protection in South Korea is required for any future commercial operations in the country and provides Archer with access to a top 5 innovation economy to exploit IP rights related to the 12CQ chip with a duration of patent right up until Dec 2036.

[†] K-semiconductor Strategy: <https://english1.president.go.kr/BriefingSpeeches/Speeches/983>

[‡] IBM Quantum Network: <https://www.ibm.com/quantum-computing/network/members/>

[§] <https://www.abc.net.au/news/2021-07-25/new-arms-race-fuelled-by-global-chip-shortage/100202390>

^{**} Korean Intellectual Property Office: <https://www.kipo.go.kr/en/MainApp?c=1000>

^{††} World Intellectual Property Indicators 2020: https://www.wipo.int/edocs/pubdocs/en/wipo_pub_941_2020.pdf

South Korea has [named investment](#) in its world-leading semiconductor industry, with the country committing to invest US\$450 billion through to 2030, the bulk of which coming from companies, including US\$150 billion by Samsung Electronics and US\$200 billion by SK Hynix. Archer will need patent protection in South Korea if the Company is to participate in the country's semiconductor industry.

Commenting on the grant of the South Korean patent, Archer CEO Dr Mohammad Choucair said: "Archer's quantum computing chip IP is now well protected in South Korea – home to some of the world's largest chipmakers, and a critical part of the global semiconductor supply chain.

"We now have 12CQ chip patents granted in Japan and South Korea, with patent applications in the US, China, and Europe progressing well.

"To realise the full commercial benefits of the 12CQ technology globally, Archer's IP strategy includes patent protection in Asia, and especially, South Korea. This is because South Korea's semiconductor industry is one of the world's best, while Asia as a whole dominates in semiconductor manufacturing, where close to 80% of all chips are produced.

"The global economy's transformation includes the semiconductor industry becoming key to almost all industrial areas. Archer is ensuring its participation in this transformation, with Archer being one of few companies in the world with a patent portfolio protecting quantum computing chip technology."

12CQ is a world-first quantum computing processor chip technology

The Japanese Patent was the first granted patent protecting the 12CQ chip (ASX ann. [20 Jan 2021](#)). The patent granting process and procedures for the additional five international patent applications in Australia, China, Hong Kong, Europe, and the US, continue to progress.

About Archer

Archer is a technology company that builds advanced semiconductor devices, including processor chips that are relevant to quantum computing. Archer's 12CQ chip is a world-first qubit processor technology that would allow for mobile quantum computing powered devices. For more information, please view Archer's [webinar](#) with IBM.

The Board of Archer authorised this announcement to be given to ASX.

General Enquiries

Mr Greg English
Executive Chairman

Dr Mohammad Choucair
Chief Executive Officer
Tel: +61 8 8272 3288

Media Enquiries

Mr James Galvin
Communications Officer
Email: hello@archerx.com.au

For more information about Archer's activities, please visit our:

Website:

<https://archerx.com.au/>

Twitter:

<https://twitter.com/archerxau>

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